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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/698,185	10/30/2000	Kosuke Inoue	500.39240X00	3560

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EXAMINER
THAI, LUAN C

ART UNIT	PAPER NUMBER
2827	

DATE MAILED: 03/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/698,185	INOUE, KOSUKE	
	Examiner	Art Unit	
	Luan Thai	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 15-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 15-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 March 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-6 and newly added claims 15-19, in Paper No. 10 is acknowledged.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the recitation of "another external connection terminal formed on one of said inclined portions of said electrically insulating layer" in claim 16 with previous claim language must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification, as originally filed, does not disclose that another external connection terminal being formed on one of the inclined portions of the electrically insulating layer, as recited in claim 16.

7. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 19, the limitation "the other inclined portion" has no antecedent basis.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

9. Claims 1-2, 5 and 17-18, insofar as in compliance with 35 USC 112, are rejected under U.S.C. 102(e) as being anticipated by Shimoishizaka et al. (6,313,532).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1-2, 5 and 17-18, Shimoishizaka et al. discloses a semiconductor apparatus comprising: a semiconductor device 10; an electrically insulating layer including first and second insulating layers 20 and 50 respectively, the first insulating layer 20 having thickness of about 30 to 150 microns (Col. 7, lines 4+), wherein one pair of opposite inclined portions of the first insulating layer 20 is different in inclination angle from each other, and one pair of opposite inclined portions of the second insulating layer 50 being different in inclination angle from each other; an external connection terminal 40 formed on the first electrically insulating layer 20, and wiring formed on the first insulating layer and provided for electrically connecting the external connection terminal to a circuit electrode 11 arranged at a central portion of the semiconductor device where the first insulating layer 20 is not formed.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 3, 6, 16, and 19, insofar as in compliance with 35 USC 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimoishizaka et al. (6,313,532).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claim 3, Shimoishizaka et al. disclose(s) all the limitations of the claimed invention as detailed above except for one of inclined portion having an inclination in a range of from about 5% to about 30% with respect to a surface of the semiconductor device.

However, Shimoishizaka et al. do teach that the first insulating layer 20 has a wedged slope portion meeting the main surface of the semiconductor device 10 where the device's circuit electrodes (11) are formed, wherein the boundary portion between the first insulating layer 20 and the semiconductor device 10 is in the shape of a slope, which does not limit the invention (Col. 9, lines 11+ and Col. 11, lines 9+). It would have been obvious for the to one having ordinary skill in the art at the time the invention was made to form the inclined portion of first insulating layer 20 having an inclination in a range of from about 5% to about 30% since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Applicant's claim 6 does not distinguish over Shimoishizaka et al. reference regardless of the process used to make the electrically insulating layer, because only the final product is relevant, not the process of making such as "being formed by printing with use of a mask". Note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao,

190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and In re Marrosi et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear. See also MPEP 706.03(e).

Regarding claim 16, Shimoishizaka et al. disclose(s) all the limitations of the claimed invention as detailed above except for another external connection terminal being formed on one of the inclined portions of the electrically insulating layer.

Shimoishizaka et al. do teach that the boundary portion between the first insulating layer 20 and the semiconductor device 10 is in the shape of a slope, which does not limit the invention (Col. 11, lines 9+, figures 8a-8d). It would have been obvious for the to one having ordinary skill in the art at the time the invention was made to form another connection terminal on the inclined portion of the insulating layer for increasing the number of external terminals of the device since the metal wiring 31 formed on the inclined portion of the insulating layer 20 is not limit in shape (see figures 8a-8d).

Regarding claim 19, Shimoishizaka et al. disclose(s) all the limitations of the claimed invention as detailed above except for the inclination angle of one of the pair of opposite inclined portions nearer to the circuit electrode being smaller that that of the other inclined portion in the first and second insulating layer members.

Shimoishizaka et al. do teach, from column 6, lines 9-15, that the end portion of the insulating layer 20 is not perpendicular to the main surface of the semiconductor device; thus, the inclination angle of the pair of opposite inclined portions nearer to the circuit electrode (11) could have been smaller that that of the other inclined portion of the insulating layer at the periphery of the semiconductor device.

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimoishizaka et al. (6,313,532) in view of Nakagawa et al. (4,983,023).

Regarding claim 4, Shimoishizaka et al. disclose(s) all the limitations of the claimed invention as detailed above except for the insulating layer 20 (e.g., having a elastic modulus, Col. 7, lines 4+) containing particles.

However, an insulating layer containing particles is conventional in the art as taught by Nakagawa et al. (Col. 2, lines 61+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply an insulating layer containing particles for Shimoishizaka et al.'s device since the use of such material is conventional in the art.

13. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimoishizaka et al. (6,313,532) in view of Yoon et al. (6,037,662).

Regarding claim 15, Shimoishizaka et al. disclose(s) all the limitations of the claimed invention as detailed above except for teaching that the wiring has a width larger on the inclined portions of the insulating layer than on another portion of the insulating layer.

Yoon et al. while related to a similar chip-scale-package design teach (see specifically figures 2 and 5) the width of the wiring bending portion, which has an inclination angle with respect to a surface of the semiconductor device 1, is larger that of another portion of the wiring in order to avoid the stresses in the inner part of the wiring (Col. 5, lines 35+) and improve the reliability of the process of manufacturing the chip-scale-package (Col. 2, lines 45+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Yoon et al. teachings to Shimoishizaka et al.'s device by forming wirings having a width larger on the inclined portions of the insulating layer than on another portion of the insulating layer in order to avoid the stresses in the inner part of the wiring and improve the reliability of the process of manufacturing the chip-scale-package.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211. The examiner can normally be reached on 7:00 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Luan Thai
March 5, 2002

DAVID L. TALBOTT
PRIMARY EXAMINER
ART UNIT 2827